Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US05/005006

International filing date: 17 February 2005 (17.02.2005)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/545,122
Filing date: 17 February 2004 (17.02.2004)

Date of receipt at the International Bureau: 14 March 2005 (14.03.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)

World Intellectual Property Organization (WIPO) - Geneva, Switzerland
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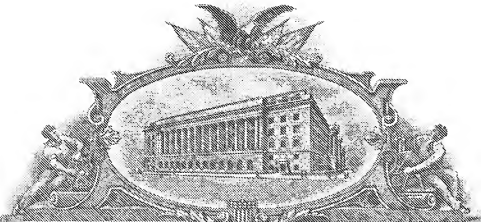

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APPLICATION NUMBER: ***60/545,122***
FILING DATE: ***February 17, 2004***
RELATED PCT APPLICATION NUMBER: ***PCT/US05/05006***

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16152 U.S.PTO 021704

22390 U.S.PTO 60/545122 021704

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. EV 318 174 645 US

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☐ *Additional inventors are being named on the _____ separately numbered sheets attached hereto*

TITLE OF THE INVENTION (280 characters max)

FLEXIBLE BAG WITH LOCATORS

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ENCLOSED APPLICATION PARTS *(check all that apply)*

☒ Specification *Number of Pages* 27 ☐ CD(s), Number

☒ Drawing(s) *Number of Sheets* 12 ☒ Other (specify) Appendix A

☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT *(check one)*

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check or money order is enclosed to cover the filing fees

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The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____.

Respectfully submitted,

SIGNATURE [signature] Date 2/17/04

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TELEPHONE 847 905-7111 Docket Number: 4700/18

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This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C., 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22202-1450.

Express Mail Label No. EV 318 174 645 US

Date of Mailing February 17, 2004

PATENT
Case No. 4700/23

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES LETTERS PATENT

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TITLE: FLEXIBLE BAG WITH LOCATORS

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FLEXIBLE BAG WITH LOCATORS

FIELD OF THE INVENTION

This invention generally relates to the art of flexible bags and, particularly, to a flexible bag with locators.

BACKGROUND OF THE INVENTION

The ability to dispense a controlled quantity of a condiment, such as ketchup, mustard, relish, salad dressings, hot wings sauce, spaghetti sauce, tartar sauce or other sauces, in an efficient manner has been important in the food service industry for many years. This is especially true for large volume food handling operations such as fast food restaurants, where employees and customers desire the ability to dispense condiments quickly and conveniently, and where even a marginal reduction in the waste of, or time required to dispense, condiments leads to significant savings in cost.

Dispensing condiments from large, flexible plastic bags is advantageous. Condiments can be easily packaged in large plastic bags at a central facility and shipped to the point of sale. Bulk plastic containers can incorporate gas barriers that allow condiments to be packaged so that they can be stored at room temperature, which makes the packages more convenient to ship and store. Storing the condiments at room temperature saves time when it is desirable that the condiment be served at room temperature by eliminating the requirement that the condiment be allowed to warm from a refrigerated temperature before use. Flexible plastic bags are a common form of packaging for food and thus are readily handled by employees without special training. Further, storing the condiments at room temperature reduces the expense of refrigeration.

Historically, many products and condiments have been shipped and stored in tin cans, often #10 tin cans. While tin cans offer good shelf life performance, tin cans contribute to waste of product that clings to the side of cans. Further, tin cans are heavy to ship, store, and are heavy and voluminous for disposal. Additionally, tin cans require can openers to open – retrieving the opener reduces operational speed, and the opener may be difficult to locate, further reducing efficiency.

Devices attempting to efficiently dispense condiments from bulk flexible plastic bags exist, including devices that use rollers advanced by gravity, by gears or rack and pinion means to squeeze condiment out of the plastic bags, but these devices have several disadvantages. Devices that use gravity actuated rollers or gears are complicated to manufacture and may involve manipulating the rollers in non-intuitive ways. Other devices that utilize more complex means for releasing condiment from the bags require that the bags incorporate specially designed fittings, including tubes and couplings, which increase the cost and complexity of the packaging. Yet other devices use motorized pumps that require electricity and possibly pressurized gases to operate, which adds to the cost and size of the dispensers. Further, pumps may result in undesired splatter, which both wastes product, as well as work effort to clean the splatter. If a pump in the front of the store splatters, customers may become unhappy. Motorized devices often require long tubes that contribute to waste of the condiment and complicate clean up. Furthermore, existing types of dispensers have a single outlet for the condiment, which reduces efficiency at workstations where multiple outlets can be accommodated. Additionally, tubes reduce the range of movement and freedom of motion of the applicator device. Additionally, devices using pressurized gas rely on the gas, and in event of gas malfunction, the device is non-functional.

Other devices utilize fitments that require significant expense, and contribute to waste if the fitment is improperly fitted. For example, a plastic fitment is used to provide a valve to a flexible bag. For use, the fitment must be separately manufactured, and heat sealed to a flexible bag.

However, accurately fitting a flexible bag into any of these dispensers has been problematic. An appropriate fit of the bag within a dispensing device is important to

ensure correct insertion, as well as minimizing waste and potentially damaging the package during use. It is further desirable to minimize the time required to insert the bag, while simultaneously increasing the accuracy of the insertion. It is also desirable to provide a bag that minimizes clean up.

The present invention advances the art.

BRIEF SUMMARY OF THE INVENTION

One embodiment of the invention provides a dispensing bag for product including a product containment portion and at least one spout receiving portion in communication with the product containment portion. The bag further includes a lower sealed region adjacent a bottom end of the containment portion including at least one bag alignment indicator, wherein the bag alignment indicator allows alignment with a valve to position the spout receiving portion to receive a dispenser spout.

Another embodiment of the invention provides a dispensing bag for product including a product containment portion and at least one spout receiving portion in communication with the product containment portion. The bag further includes indicator means for aligning the dispensing bag with a dispenser to position the spout receiving portion to receive a dispenser spout.

Yet another embodiment of the invention provides a dispensing bag for product including a product containment portion and at least two spout receiving portions in communication with the product containment portion.

The foregoing and other features and advantages of the invention will become further apparent from the following detailed description of the presently preferred embodiments, read in conjunction with the accompanying drawings. The detailed description and drawings are merely illustrative of the invention rather than limiting, the scope of the invention being defined by the appended claims and equivalents thereof.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 is a back view of one embodiment of a system in accordance with one embodiment of the invention;

FIG. 1A is a perspective view of one embodiment of a bag in accordance with one aspect of the invention;

FIG. 1B is a perspective view of one embodiment of a bag in accordance with one aspect of the invention;

FIG. 2A is a front view of one embodiment of a system in accordance with one embodiment of the invention;

FIG. 2B is a view of one embodiment of a dispenser in accordance with the invention;

FIG. 3A is a cross-sectional view of one embodiment of a dispenser in accordance with the invention;

FIG. 3B is an exterior view of the bottom of one embodiment of a dispenser in accordance with the invention;

FIG. 4 is a view of one aspect of a system in accordance with one embodiment, of the invention;

FIG. 5 is a view of one embodiment of a system in accordance with one embodiment of the invention; and

FIG. 6 is a view of one embodiment of a system in accordance with one embodiment of the invention;

FIG. 7 is a bottom view of one embodiment of a system in accordance with one embodiment of the invention; and

FIG. 8 is a view of one embodiment of a system in accordance with one embodiment of the invention.

DETAILED DESCRIPTION

FIG. 1 illustrates a system 10 in accordance with one embodiment of the invention. System 10 includes a frame 20, top clip 30, roller frame 40, and valve assembly 50. System 10 further includes housing 5 (see FIG. 5) and dispenser 15 (see

FIGS. 3A and 3B). In one embodiment, flexible bag 90 is retained and supported, at least in part, by top clip 30 and held within roller assembly 40.

Housing 5 is operable to support frame 20. In one embodiment, housing 5 is a free standing unit, configurable to rest upon, for example, a table top. In another embodiment, housing 5 is configured as a wall-mounted unit. In one embodiment, frame 20 includes a male adaptor configured to mate with a female adaptor in frame 5 for a sliding engagement between frame 20 and housing 5. In one embodiment, frame 20 includes a female adaptor configured to mate with a male adaptor in frame 5 for a sliding engagement between frame 20 and housing 5. Embodiments with a female adaptor on the frame 20 may have a groove, such as groove 101 depicted in FIGS. 6 and 7, in either the top of the frame (such as, for example, top clip 30), the bottom of the frame (such as, for example, valve assembly 50), or both. Housing 5 may comprise any appropriate material. In food applications, stainless steel may offer advantages, while in other applications, another material, such as, for example, plastic or PVC plastic may offer superior performance. In another embodiment, housing 5 includes a support ledge for supporting a handheld dispenser such that the contents of a bag may be dispensed into the interior of the handheld dispenser. In one embodiment, the handheld dispenser is as illustrated in FIGS. 3A and 3B.

Frame 20 comprises two sides 21 connecting top clip 30 and valve assembly 50. Frame 20 further includes track support 26. In one embodiment, sides 21 are disposed substantially at opposite ends of top clip 30 and valve assembly 50, forming an approximately quadrilateral configuration. In one embodiment, sides 21 include grips configured to conform to human fingers to provide easy handling. In one embodiment, track support 26 connects top clip 30 and valve assembly 50 at approximately a midpoint of a length L of top clip 30 and valve assembly 50. Frame 20 is sized so that a flexible bag carried within the frame extends substantially from the top clip 30 to the valve assembly 50, with the top clip 30 supporting the bag and valve assembly 50 controlling the dispensing of product contained by the bag

Track support 26 includes a base portion 27 and top portion 28. Base portion 27 is attached to the valve assembly 50. Top portion 28 is affixed to top clip 30. Track support 26 is configured, in an example, so that roller frame 40 is slidably engaged and

translates axially along track support 26 via a bearing surface of the roller frame 40. In one embodiment, roller frame 40 translates freely along track support 26. In another embodiment, the interface between roller frame 40 and track support 26 comprises any variety of bearing configurations including a frictional grip, teeth, or ratchets. Track support 26 with base portion 27 and top portion 28 is illustrated in FIG. 1 engaged with roller frame 40. In one embodiment, track support 26 is configured for snap in and out attachment with top clip 30 and valve assembly 50.

Top clip 30 includes front 24 hingedly attached to back 25. In a closed configuration, front 24 and back 25 are positioned parallel and positioned adjacent each other. In an open configuration, front 24 and back 25 are non-parallel. In one embodiment, front 24 is secured to back 25 with a latch assembly 23. In one embodiment, latch assembly 23 is integral with the front 24 and back 25. In another embodiment, latch assembly 23 includes a spring 22 operable to bias front 24 and back 25 into an open configuration. In one embodiment, back 25 is configured to be fixed relative to frame 10, while front 24 is configured to open and close relative to back 25.

Roller frame 40 includes a first roller arm 41 and a second roller arm 42. While in a closed configuration, first roller arm 41 and second roller arm 42 are positioned parallel and adjacent each other. In an open configuration, first roller arm and second roller arm 42 are non-parallel. First roller arm 41 and second roller arm 42 are hingedly attached at one end of each. In one embodiment, first and second roller arms are hingedly attached at the same end as front 24 and back 25. First roller arm 41 and second roller arm 42, in one embodiment, are maintained in a closed configuration with a latch assembly 39. In one embodiment, the latch assembly includes a spring operable to bias the first and second roller arms into an open configuration. In one embodiment first roller arm 41 and second roller arm 42 are rotatably attached to the frame 40. In another embodiment, first roller arm 41 is rotatably attached to frame 40 and second roller arm 42 is attached to frame 40.

First roller arm 41 includes a roller 43 axially disposed with first roller arm 41 and rotatably affixed to the first roller arm. Second roller arm 42 includes a roller 44 axially disposed with second roller arm 42 and rotatably affixed to the second roller arm 42. Each roller 43, 44 is rotatably attached to roller frame 40. Roller frame 40 is

configured to translate along track support 26, and includes a bearing surface in second roller arm 42.

A flexible bag containing product is retainable between the first and second roller arms 41, 42 when in a closed configuration. When in a closed configuration, roller arms 43, 44 form a nip 45. As first and second rollers 43, 44 rotate, product from a bag positioned in the nip is dispensed through a spout in the bag and through valve assembly 50.

Roller 43 is operably attached to an actuator 46. Rotation of the actuator 46 directly rotates roller 43, roller 44 rotates in response to rotation of roller 43, and simultaneously translates the rollers 43, 44 relative to a product filled bag positioned in the nip to dispense food product. In one embodiment, actuator 46 is a knob. In another embodiment, actuator 46 is a lever. In one embodiment, actuator 46 is manually actuated, while in another embodiment, actuator 46 is actuated with mechanical, electrical, or magnetic assistance. In one embodiment, actuation of actuator 46 results in vertical translation of the roller frame along track support 26. In one embodiment, actuator 46 comprises a portion of an actuator assembly 49. In one embodiment, actuator assembly 49 includes a spring biasing the actuator 46 to a closed configuration.

In one embodiment, at least one of the rollers 43, 44 comprises a knurled region 47. FIG. 2A best depicts knurled region 47. In one embodiment, the knurled region 47 extends along substantially all of a length of the roller. In another embodiment, at least one of the rollers 43, 44 includes a relief region 48 that is not knurled. FIG. 2A best depicts relief region 48. In one embodiment, a relief region 48 includes a covering, such as, for example, an elastomeric or rubber sleeve to increase friction between the relief region 48 and a complementary region on the other roller. In other embodiments, the covering is configured for a smooth, relatively high friction surface to interface with the other roller. In embodiments where the relief region 48 is a sleeve, the sleeve may be adhesively applied to the roller. As used herein, a "knurl" is a protrusion that is regularly spaced but does not extend axially along a substantial portion of the roller without interruption. The word "knurl" further comprises a series of small ridges or grooves on the surface or edge of a metal object to aid in gripping, so long as the ridges or grooves do not extend axially along a substantial portion of the roller without interruption. In one

embodiment, the knurl is a protrusion in a pyramid configuration, with the peak of the pyramid extending perpendicularly from the axis of the roller. In one embodiment, both rollers 43, 44 are knurled in at least a knurled region 47. In one embodiment, the knurled region 47 comprises a middle region of the roller 43, 44, and the relief region 48 is formed adjacent at least one end region of the roller 43, 44. In other embodiments, at least a portion of knurled region 47 is adjacent at least one end portion of the roller 43, 44. For example, knurled region 47 may be immediately adjacent an end of roller 43, with a relief region 48 adjacent knurled region 47 and a second knurled region adjacent relief region 48.

In one embodiment, first roller 43 includes a knurled region 47 between two relief regions 48 located at opposite ends of first roller 43, while second roller 44 comprises a knurled region 47 but does not include a relief region. In one embodiment, the each relief region 48 comprises no more than approximately 20% of the length L of the roller 43.

In one embodiment, actuator 46 is substantially coaxial with at least one of the rollers arms 43, 44.

Valve assembly 50 includes a front 51 and a back 52. When in a closed configuration, front 51 and back 52 are substantially parallel and adjacent each other. In another embodiment, front 51 and back 52 are hingedly attached at one side of each. In one embodiment, front 51 and back 52 are hingedly attached at the same end as front 24 and back 25. Front 51 and back 52, in one embodiment, are maintained in a closed configuration with a latch assembly 59. In one embodiment, the latch assembly includes a spring operable to bias the front 51 and back 52 into an open configuration. The latch assembly may be constructed either integrally with the front 51 and back 52, or the latch assembly may be affixed to the valve assembly 50 with any known means of attachment, including clips, Velcro-brand fasteners, snaps, zippers, or the like.

Front 51 and back 52, in one embodiment, further include at least one bag alignment indicator 59. In one embodiment, bag alignment indicator 59 comprises a pin affixed with one of front 51 and 52 configured to match a pin receiving hole integral with the other of front 51 and 52. The pin may be integral with one of front 51 and back 52.

Bag alignment indicator may be configured to mate with bag alignment indicators of a flexible bag.

In one embodiment, track support 26 connects valve assembly 50 and roller frame 40 at approximately a midpoint of a length L of valve assembly 50. In one embodiment, track support 26 connects valve assembly 50 and roller frame 40 at approximately a midpoint of a length L of roller frame 40.

In one embodiment, back 52 includes a groove 101 configured to mate with a housing rail 645 (see FIG. 6) to provide additional support to system 10 and provide a sliding connection between back 52 and housing 5. In one embodiment, groove 101 is configured to slidingly engage with housing rail 645 (see, FIGS. 6, 7).

Valve assembly 50 further includes at least one spout receiving portion 55 (see FIG. 2A). Spout receiving portion 55 is configured to receive a spout 75 of a flexible bag containing product. Each spout receiving portion 55 is configured with complementary cut-out areas 56 on each of front 51 and back 52, as well as a valve 53 contained within the cut-out areas 56. Valve 53 is operably attached to an actuator 58 (see FIG. 2B). In one embodiment, actuator 58 comprises a lever that is hingedly attached to the valve 53.

In yet another embodiment, valve 53 is actuated by the actuator 46 that actuates the rollers 43, 44. In such an embodiment, each valve 53 is connected with a link to the actuator 46, such that actuation of actuator 46 simultaneously actuates the rollers 43, 44 and valves 53. Actuation of actuator 46 drives a catch axial to the rollers, actuating a polygonal rod configured to be driven by the catch. Actuating the polygonal rod causes the rod to rotate about an axis that is non-parallel to the rollers. In one embodiment, the axis of the rod is substantially perpendicular to the axis of the rollers. Rotation of the polygonal rod causes translation of a valve catch in valve assembly 50. The valve catch is configured to be driven by the polygonal rod. In one embodiment, the valve catch includes a toggle. Translation of the valve catch opens and closes the valves 53. In one embodiment, the valve catch is configured such that valve 53 is locked in a closed configuration, while even a slight rotation of the polygonal rod causes the valve catch to disengage from its locked position, and valve 53 will open. One embodiment of such a valve catch is as illustrated in FIG. 4. In another such embodiment, valve 53 is biased to a closed position with a spring biasing the actuator 46. Thus, in certain embodiments,

actuator 58 may be the identical structure as actuator 46. Actuation of actuator 46 includes a variety of methods known in the art, but include rotation of a knob-type actuator by any appropriate degree of rotation, for example, 90 degrees, 45 degress or 30 degrees.

The elements of an embodiment wherein actuator 46 actuates the valve 53 are shown in exploded view in FIG. 4. At 400, the actuator system 410 are illustrated as including knob 420, spring 415, receiver 423, driving element 425, driving disc 427, rod 430, valve element 435, actuator catch 440, and valve catch 445. Spring 415 biases the position of knob 420 relative to receiver 423. Receiver 423 mates with flights formed using conventional techniques into the outer surface of driving element 425 to rotate the rollers 42, 43 using driving disc 427 mated with the rollers, as described above. Rotation of knob 420 simultaneously results in the axial translation of actuator catch 440 by pressure applied to surface 441. Actuator catch 440 includes a reception hole configured such that rod 430 snugly fits within the diameter of reception hole 443. In one embodiment, rod 430 and reception hole comprise a hexagonal cross-section, although any polygonal shape may be used. Reception hole 443 is hingedly attached with hinge 444 to the remaining portion of actuator catch 440 such that axial translation of actuator catch 440 results in rotation of reception hole 443 and thus rotation of rod 430. Rotation of rod 430 results in axial translation of valve catch 445 using similar principles – rotation of rod 430 causes reception hole 446 to axially translate valve catch 445 to result in translation of valve element 435.

Valve 53 is configured to match the profile of a flexible bag. In one embodiment, a flexible bag includes a spout receiving portion configured to match valve 53. In one embodiment, valve assembly 50 is configured such that at least a portion of a lower sealed region of a bag extends through the valve 53 such that the product dispensed by the bag does not contact the valve 53 during dispensing.

FIG. 7 is an underside view of valve assembly 50. As illustrated in FIG. 7, valve assembly includes front 51, back 52 and valve 43.

Referring now to FIGS. 1A and 1B, System 10 further includes a flexible bag 90 containing product 91 to be dispensed. Bag 90 includes a product containment portion 92 and at least one spout receiving portion 93 in communication with the product

containment portion. Product containment portion 92 is an interior region of the bag 90 defined by a top sealed support portion 94, and at least two sealed sidewall portions 91. Product containment portion is further defined by a lower sealed region 95 adjacent a bottom end 99 of the containment portion 92. In one embodiment, the lower sealed region 95 includes at least one bag alignment indicator 97, wherein the bag alignment indicator 97 allows alignment of the spout receiving portion with a valve to position the spout receiving portion to receive a dispenser spout. In one embodiment, the bag alignment indicator comprises a hole configured to mate with a bag alignment pin in valve assembly 50. In one embodiment, bag 90 includes a single spout receiving portion 93, while in another embodiment bag 90 includes two spout receiving portions 93.

In order to dispense the product contained within bag 90, a tear strip 96 is included. Tear strip 96 may be configured to be easily torn by hand, or may be configured to require a sharp implement to cut along the strip. In embodiments configured to be torn by hand, tear strip 96 may be perforated, or may comprise an area where lower sealed region 95 has reduced thickness relative to the remaining portions of lower sealed region 95. Tear strip 96, in one embodiment, is located so that the at least one bag alignment indicator 97 is disposed between the tear strip 96 and the product containment portion 92.

In the embodiment illustrated in FIG. 1A, bag 90 includes two spout receiving portions 93 configured to match two valves 53. In one embodiment, lower sealed region 95 comprises a triangular shape between the two spout receiving portions, such that any product contained in product containment portion 92 will be biased to flow to one of the two spout receiving portions.

In the embodiment illustrated in FIG. 1B, bag 90 includes a single spout receiving portion 93 disposed near an edge of lower sealed region 95. In such an embodiment, lower sealed region 95 is configured with a slope such that any product contained in product containment portion 92 is biased to flow to the spout receiving portion. In one embodiment, the slope is an angle between approximately 1 degree and approximately 5 degrees.

Spout receiving portion 93 is configured to dispense the product contained within product containment portion. In one embodiment, spout receiving portion 93 is

configured to mate with a spout 505 (see FIG. 5) to receive the product and convey the product to a desired location. In one embodiment, the spout includes an angle to dispense the product to a location other than directly below the spout receiving portion. In one embodiment, the spout is configured in an approximate "s" shape. In one embodiment, the spout is carried within a hinged housing 510 external to the system 10. In an embodiment, the hinged housing 510 comprises a hinged attachment configured to attach to valve assembly 50. In another embodiment the spout is configured to dispense the product exterior to a housing carrying system 10.

Top sealed support portion 94 is configured to provide a region for support. In one embodiment, top sealed support portion 94 is configured to be supported by top 22. In another embodiment, roller frame 40 provides sufficient support when in a closed configuration. In one embodiment, top sealed support portion 94 is at an end of the food product containment portion opposite the lower sealed region 95.

In one embodiment, bag 90 is constructed of a flexible plastic capable of preserving the condiment at room temperature. In another example, bag 90 is a barrier bag. The edges of the bag 94, 95, 96 are heat-sealed, and one or more openings spout receiving portions 93 are molded into the lower sealed region. In one embodiment, bag 90 comprises a flexible food grade plastic. In one embodiment, the bag comprises a biaxially oriented nylon material laminated to an ethyl-vinyl-alcohol (EVOh) polyethelyne or metallocene sealant. Other embodiments include the use of linear low density blends as well as low density EVA blends.

FIG. 3A illustrates a dispenser 310 comprising a reservoir 311 that contains the condiment, a valve 312 that releases the condiment in controlled quantities, and a handle 313 with a trigger 333 that actuates the valve in accordance with one embodiment of the invention.

The reservoir 311 has an open top 320, sides 321, and a bottom 322. In one embodiment, the reservoir 311 is generally cylindrical, and the top 320 has a larger diameter than the bottom 322. In some embodiments, the top 320 is sized to facilitate easy refilling of the reservoir 311. In another embodiment, the dispenser 310 is substantially frusto-conical. Optionally, a cover (not shown) can be placed over the top 320 to reduce the likelihood of foreign matter falling into the reservoir 311.

FIG. 3B illustrates the bottom 322 of one embodiment of a reservoir 311 comprising 5 holes 323. In other embodiments, the bottom 322 contains a plurality of holes 323. Holes 323 permit the condiment to exit the reservoir 311. The bottom 322 is sized and the holes 323 are spaced so that the dispenser releases the condiment onto a food product in a predetermined pattern. Holes 323 may be arranged in any number of predetermined diffusion patterns. In one example, holes 323 are arranged at the vertices of a pentagon. In another example, holes 323 are arranged at the vertices of a square with an additional hole 323 at the center of the square.

The reservoir 311 is made, in one embodiment, of a single piece of a plastic that does not react with food products and is easy to clean. In another embodiment, the reservoir 311 is constructed from a plurality of pieces that are molded together using any appropriate fabrication technique. In another embodiment, reservoir 311 comprises a high density polyethelene (HDPE) or other food grade plastic that is resistant to the contents of the reservoir. The embodiment shown in FIG. 3B incorporates a plurality of horizontal lines 324 on the walls of the reservoir 311 that indicate suggested minimum and maximum levels for the condiment in the reservoir. The horizontal lines 324 are molded, in one embodiment, into the walls 321 of the reservoir 311. In another embodiment, additional horizontal lines 324 are included to indicate other suggested fill levels, such as a level to fill at times during which the condiment likely will not be frequently used, such as, for example, late at night or during off-hours.

In one embodiment, handle 313 actuates valve 312. Actuation of valve 312 controls the flow of condiment from the reservoir 311. The handle 313 includes a fixed component 331 and a movable trigger 332, as shown in Fig. 3A. In the embodiment shown in FIG. 3A, the fixed component 331 is molded as an integral part of the reservoir 311. In another embodiment, fixed component 331 is hollow with an open bottom. Fixed component 331 and trigger 332 are configured so that trigger 332 actuates valve 312 and mates and is accepted into a hollow portion of the fixed component 331. In one embodiment, the fixed component 331 extends from the reservoir 311 at an angle that allows the dispenser to be disposed above a target with bottom 322 of the dispenser level with the food product. Thus, fixed component 331, in an embodiment, extends from

reservoir 311 at an angle between 0 and 90 degrees. In such an embodiment, the operator's hand may attain an ergonomically neutral position.

The trigger 332 is functionally connected to the valve 312, and it is located on the handle 313. In one embodiment, an operator can hold the dispenser 310 and actuate the valve 312 with one hand. Several alternative structures exist that would perform the function of the trigger 332, but the trigger 332 shown in the drawings includes a lower arm 333, an axle 334, and an upper arm 336. The lower arm 333 extends below the fixed component 331 of the trigger 332 and between the fixed component 331 and the reservoir 311, where an operator can apply force to the lower arm 33 and actuate the trigger 332. Axle 334 operably and rotatably connects trigger 332 with fixed component 331. In one embodiment, axle 334 is substantially cylindrical and rotates within holes formed in the fixed component 331 of the handle 313. In one embodiment, the holes are substantially the same diameter as axle 334. Upper arm 336 extends from axle 334 to the topmost element of the valve 312. When force is applied to lower arm 333 of trigger 332, trigger 332 rotates about the axle 334, moving upper arm 36 downward, and actuating valve 312. In the embodiment illustrated in FIG. 3A, trigger 332 comprises finger grips configured to match the contours of a human hand.

In one embodiment, trigger 332 is configured so that the pressure applied to trigger 332 determines which of at least two volumes of product is released. For example, a two position trigger may dispense 5 grams of product if 5 foot pounds of pressure is applied to the trigger, and dispense 9 grams of product if more than 6 foot pounds of pressure is applied. The configuration actuates the valve to dispense a default volume of product, i.e. 5 grams in the above example, or a larger volume if desired. Such a configuration may be desirable, for instance, if two similar products are to receive the product. For example, a restaurant may serve two similar hamburgers – a hamburger featuring a quarter pound of hamburger and a hamburger featuring a half pound of hamburger. In this example, the quarter pound hamburger may receive a smaller volume of ketchup than the half pound hamburger, and this may be selected by the amount of force applied to the trigger.

In one embodiment, fixed element 331 includes a female lock assembly 391 configured to lockably communicate with a male lock assembly 390 of trigger 332. Male

lock assembly 390 mates with female lock assembly 91 to lock trigger 332 in an actuated position.

Valve 312 comprises an upper column 340, a lower column 341, a piston 342 and a cylinder 343. As shown in FIG. 3A, upper arm 336 includes a cavity 337 that receives the upper end of the upper column 340. The upper column 340 extends from the cavity 337 in the upper arm 336 to the lower column 341. The bottom 347 of the upper column 340 is closed, and rests atop the lower column 341.

A vertical wall 344 extends around the circumference of the bottom 347. Opening 345 is sized to accept bottom 347 and vertical wall 344, and is configured so that the edge of the vertical wall 344 connects with the edge of the piston 342. In operation, the vertical wall 44 forms a seal with the opening 345 of the piston 342 when the trigger 332 is squeezed. Wall 334 severs or compresses any particulate matter disposed within the condiment stored in reservoir 311, and seals the intersection between the upper column 340 and the piston 342. In one embodiment, vertical wall 344 is thinner than the reservoir 311.

Piston 342 rests in the upper chamber 348 of the valve cylinder 343, as shown in FIG. 3A. Piston 342 includes a central hole 349 through which the lower column 341 extends. Reservoir 311 and upper chamber 348 communicate through a plurality of piston holes 346. The piston holes 346 have walls that are chamfered so as to remove sharp edges at the top and bottom surfaces of the piston 342.

Valve cylinder 343 rests at the bottom of the reservoir 311. Valve cylinder 343 is sized to form a seal between the exterior of the cylinder 343 and the bottom of the reservoir 311. In one embodiment, the seal created between the exterior of cylinder 343 and the bottom of reservoir 311 prevents the condiment from leaking around the cylinder. In addition to the upper chamber 348, described above, valve cylinder 343 includes a lower chamber 350 and a partition 351 that separates the upper chamber from the lower chamber. Like the piston 342, the partition 351 has a central hole 352 through which the lower column 341 extends and a plurality of holes 353. In one embodiment, the holes 353 are chamfered to remove sharp edges at the top and bottom surfaces of the partition. A cylindrical vertical wall 354 extends below the partition 351 and forms a seal with the bottom plate 355 of the lower column 341. In one embodiment, vertical wall 354 is

thinner than the walls of the reservoir 311. In operation, the vertical wall 353 severs or compresses any particulate matter in the condiment, thereby improving the seal between the valve cylinder 343 and the bottom plate 355 of the lower column 341.

The lower column 341 extends through the central hole 349 of the piston and the central hole 352 of the valve cylinder partition 351. As shown in FIG. 3A, the top of the lower column 341 is in contact with the bottom 347 of the upper column 340. The lower column 341 has a bottom plate 355 that fits into the thin vertical wall 354 of the valve cylinder 343 to form a seal, as described above. Upper plate 356 of lower column 341 is positioned below the piston 342. The upper plate 356 is positioned so as to engage the piston 342 but not to obstruct the piston holes 346. A spring (not shown) biases lower column 341 to form a seal between bottom plate 355 and valve cylinder 343. The spring further biases lower column 341 so that the piston 342 is located at the top of the upper chamber 348 when the trigger 332 is not actuated.

The operation of the embodiment of the invention shown in FIG. 3A is as follows. When the trigger 332 is not depressed, the lower column 341 is positioned so that the bottom plate 355 forms a seal with the vertical walls 354 of the valve cylinder 343. The piston 342 is positioned at the top of the upper chamber 348, and a gap exists between the piston and the upper column 340. In this position, the condiment can flow from the reservoir 311 through the gap between the piston 342 and the upper column 340 and through the piston holes 346 into the upper chamber 348 of the valve cylinder 343. The seal between the bottom plate 355 and the vertical walls 354 of the valve cylinder 343 prevents the condiment from flowing into the lower chamber 350 and exiting through the holes 323 in the bottom 322 of the dispenser 310.

On actuation of trigger 332, the vertical wall 344 moves downward and engages with wall 345 of the piston 342, forming a seal that prevents further condiment from flowing into the upper chamber 348. The action of the trigger 332 also moves the lower column 341 downward, which forms a gap between the bottom plate 355 and the valve cylinder 343, permitting condiment in the upper chamber 348 to flow through the holes 353 of the valve partition 351 and out the holes 323 in the bottom 322 of the dispenser. Further action of the trigger 332 depresses the piston 342, thereby forcing the condiment in the upper chamber 348 out of the dispenser.

When the trigger 332 is released, lower column 341 moves upward, restoring the seal between the bottom plate 355 and the vertical walls 354 of the valve cylinder 343. The upper plate 356 engages the piston 342 and moves piston 342 upward to its original position at the top of the upper chamber 348. The upper column 340 also moves upward, restoring the gap between the piston wall 345 and the vertical wall 344. In this position, condiment flows into the upper chamber 348 but not the lower chamber 350, and the dispenser 310 is ready to be used again.

A container in accordance with the embodiments illustrated in FIGS 3A and 3B may be constructed of modular components that may be disassembled and reassembled.

In an exemplary embodiment, the system as described herein may be used to dispense condiments both in the "front of the store" and in the "back of store" using identical bags 90. Operation of the system entails providing a system 10 and a bag 90 containing product to be dispensed through the system 10. Roller assembly 40 is operated to configure roller assembly 40 into an open configuration. An upper portion of bag 90 is inserted between rollers 43, 44 such that the majority of product is located between the rollers 43, 44 and the lower sealed region 95. Roller assembly 40 is then operated to configure roller assembly to a closed and locked configuration. Roller assembly 40 is placed adjacent top clip 30, and if sufficient material of bag 90 is available for insertion into top clip 30, top clip 30 is operated to assume an open configuration, at least a portion of the sufficient material is placed between the arms of top clip 30 and top clip 30 is then operated to assume a closed configuration. Valve assembly 50 is operated to assume an open position and the lower sealed region 95 is placed between front 51 and back 52, such that at least one spout receiving portion mates with at least one valve 53, and the valve 53 is located between any tear strip 96 and the spout receiving portion. In embodiments with bag alignment indicators, the bag alignment indicators 59, 97 are also aligned. Valve assembly 50 is then operated to assume a closed, and locked, configuration. An operator may choose to ensure that valve 53 is in a closed configuration such that the product containment portion 92 is insulated from the tear strip 96. Tear strip 96 is then torn, or a lower sealed portion is cut such that if valve 53 assumes an open configuration, product disposed in product containment portion 92 may be dispensed from the bag into the environment. In one embodiment,

product is dispensed into a container, such as, for example, the container described in FIGS. 3A and 3B. In another embodiment, product is dispensed directly onto an area below valve 53.

FIG. 8 illustrates one embodiment of a housing for a system 10 in accordance with one aspect of the invention. As illustrated in FIG. 8, housing 810 includes a hinged door 820 providing selective access to an interior portion (not shown) of housing 810. Housing 810 further includes a base portion 830, support portion 840 and product portion 850. Product portion 850 includes an interior region configured to entirely enclose system 10 as described in FIGS 1 and 2 with a bag 90 as described in FIGS. 1A and 1B. Housing 810 further includes a gap 860 configured to be in sliding engagement with actuator assembly 49 such that as product is dispensed from bag 90, actuator 46 descends along gap 860. Base portion 830 includes spill portion 831. As better illustrated in FIG. 5, housing 810 provides access for a spout 505 to dispense the product contained within bag 90.

Hinged attachments described herein may comprise any number of known hinge assemblies. For example, a hinged attachment includes a pin inserted through the hinged parts, and the hinged parts rotate about the axis of the pin. In another example, the hinge is externally affixed to the devices, such that the devices rotate about the axis of the external hinge. Thus, the components of hinged attachments may be integral with other structures.

Those of ordinary skill in the art will readily recognize that bag 90 may contain any number of consumer and commercial products. Bag 90, for example, may contain food products, such as ketchup, mustard, and other condiments. In another example, bag 90 may contain sanitizers, soap or other cleaning products. In another example, bag 90 contains salad dressing or pasta sauces. In another example, bag 90 contains glue. In another example, bag 90 contains pancake batter, or an egg batter. In another example, bag 90 contains chemicals or other industrial products.

Those of ordinary skill in the art will readily recognize that the parts of system 10 other than bag 90 may comprise any appropriate material or materials. Thus, the structural components, such as frame 20, top clip 30, roller frame 40, valve assembly 50, housing 5 and dispenser 15 may be plastic, PVC plastic, metal, steel or any other

appropriate material or combination of materials. In one embodiment, the gripping connections between the front of an assembly or clip may include steel portions mating with plastic portions of the back of the assembly or clip. In another embodiment, track 26 comprises stainless steel or similar material.

One embodiment of the invention includes the use of more than one system 10 in a modular system. Using a plurality of systems 10 in a modular system allows the operator to provide a plurality of condiments, for example, in a single location. Modular systems may provide a smaller footprint, conserving space utilization.

While the embodiments of the invention disclosed herein are presently considered to be preferred, various changes and modifications can be made without departing from the spirit and scope of the invention. The scope of the invention is indicated in the appended claims, and all changes that come within the meaning and range of equivalents are intended to be embraced therein.

WHAT IS CLAIMED IS:

1. A dispensing bag for product, the bag comprising:
A product containment portion;
At least one spout receiving portion in communication with the product containment portion;
A lower sealed region adjacent a bottom end of the containment portion including at least one bag alignment indicator, wherein the bag alignment indicator allows alignment with a valve to position the spout receiving portion to receive a dispenser spout.

2. The bag of claim 1 wherein the lower sealed region comprises a tear strip configured to open the spout receiving portion.

3. The bag of claim 2 wherein the tear strip comprises perforations.

4. The bag of claim 2 wherein the at least one bag alignment indicator is located between the product containment portion and the spout receiving portion.

4. The bag of claim 1 further comprising a support portion.

6. The bag of claim 4 wherein the support portion is at an end of the product containment portion opposite the lower sealed region.

7. The bag of claim 1 wherein the bag comprises a material selected from the group consisting of biaxially oriented nylon material laminated to an ethyl-vinyl-alcohol (EVOh) polyethelyne and metallocene sealant.

8. The bag of claim 1 wherein the lower sealed region is heat sealed.

9. A dispensing bag for product, comprising:
A product containment portion;
At least one spout receiving portion in communication with the product containment portion;
Indicator means for aligning the dispensing bag with a dispenser to position the spout receiving portion to receive a dispenser spout.

10. The bag of claim 9 wherein the bag further comprises a lower sealed region comprising a tear strip configured to open the spout receiving portion.

11. The bag of claim 10 wherein the tear strip comprises perforations.

12. The bag of claim 9 wherein the at least one bag alignment indicator is located between the product containment portion and the spout receiving portion.

13. The bag of claim 9 further comprising a support portion.

14. The bag of claim 13 wherein the support portion is at an end of the product containment portion opposite the lower sealed region.

15. The bag of claim 9 wherein the bag comprises a material selected from the group consisting of biaxially oriented nylon material laminated to an ethyl-vinyl-alcohol (EVOh) polyethelyne and metallocene sealant.

16. A dispensing bag for product, comprising:
A product containment portion;
At least two spout receiving portions in communication with the product containment portion.

17. The bag of claim 16 further comprising a lower sealed region.

18. The bag of claim 17 wherein the at least two spout receiving portions are disposed in the lower sealed region.

19. The bag of claim 17 wherein the lower sealed region further comprises a tear strip and at least one bag alignment indicator located between the product containment portion and the tear strip.

20. The bag of claim 16 wherein the bag comprises a material selected from the group consisting of biaxially oriented nylon material laminated to an ethyl-vinyl-alcohol (EVOh) polyethelyne and metallocene sealant.

APPARATUS FOR DISPENSING CONDIMENTS FROM FLEXIBLE BAGS

ABSTRACT OF THE DISCLOSURE

A dispensing bag for product includes a product containment portion and at least one spout receiving portion in communication with the product containment portion. The bag further includes a lower sealed region adjacent a bottom end of the containment portion including at least one bag alignment indicator, wherein the bag alignment indicator allows alignment with a valve to position the spout receiving portion to receive a dispenser spout.

1. A roller assembly for dispensing product from a bag, comprising:
a roller frame;
a first knurled roller rotatably attached to the frame;
a second knurled roller attached to the frame, the second knurled roller positioned adjacent the first knurled roller to form a nip;
an actuator operably attached to one of the first and second roller, wherein product from a bag positioned in the nip is dispensed as the first and second rollers rotate responsive to rotation of the actuator.

2. The assembly of claim 1 wherein at least one of the rollers comprises a relief region.

3. The assembly of claim 2 wherein the relief region is formed adjacent an end region of the roller.

4. The assembly of claim 1 wherein at least one of the rollers is hingedly attached to the frame.

5. The assembly of claim 1 further comprising a latch assembly configured to maintain the first and second rollers in a closed configuration when the latch assembly is in a latched configuration..

6. The assembly of claim 5 wherein the latch assembly comprises a spring biasing the latch assembly to an open configuration..

7. The assembly of claim 1 wherein the second roller is rotatably attached to the frame.

8. A roller assembly for dispensing product from a bag, comprising:
a roller frame;
a first roller rotatably attached to the frame;
a second roller attached to the frame, the second roller positioned adjacent the first roller to form a nip, the second roller comprising a knurled region and at least one relief region;
an actuator operably attached to one of the first and second roller, wherein product from a bag positioned in the nip is dispensed as the first and second rollers rotate responsive to rotation of the actuator.

9. The assembly of claim 7 wherein the first roller includes a knurled region.

10. The assembly of claim 7 wherein the second roller is rotatably attached to the frame

11. A roller assembly for dispensing product from a bag, comprising:
a roller frame;
a first roller rotatably attached to the frame;
a second roller rotatably attached to the frame, the second roller positioned adjacent the first roller to form a nip;
an actuator operably attached to one of the first and second roller, wherein rotation of the actuator directly rotates the rollers and simultaneously translates the rollers relative to a product filled bag positioned in the nip to dispense food product.

12. The assembly of claim 10 wherein at least one of the first and second rollers comprises a knurled region.

13. The assembly of claim 11 wherein at least one of the first and second rollers includes a relief region.

14. The assembly of claim 12 wherein the relief region comprises a covering.

15. The assembly of claim 13 wherein the covering comprises at least one material selected from the group consisting of: a soft material, a high friction material, an elastomer, rubber, and a smooth material.

1. A system for dispensing product, comprising:
A track support;
A roller assembly slidably engaged with the track support,;
A valve assembly attached to a base portion of the track support, wherein a flexible product filled bag is retainable between the rollers and wherein the roller assembly translates down the track support to force food product toward the valve assembly.

2. The system of claim 1 wherein the valve assembly includes a actuator to actuate the valve.

3. The system of claim 1 wherein the valve assembly is actuated by a roller assembly control member.

4. The system of claim 1 further comprising a dispensing bag.

5. The system of claim 4 wherein the bag comprises a material selected from the group consisting of biaxially oriented nylon material laminated to an ethyl-vinyl-alcohol (EVOh) polyethelyne and metallocene sealant

6. The system of claim 1 wherein the track support connects the roller assembly and the valve assembly at approximately a midpoint of a length of the valve assembly.

7. The system of claim 1 further comprising a top clip.

8. The system of claim 1 wherein at least one of the roller assembly and valve assembly comprises a latch.

9. The system of claim 8 wherein the latch comprises a spring biasing the latch to an open configuration.

10. The system of claim 1 wherein the roller frame comprises a plurality of rollers.

11. The system of claim 1 wherein the valve assembly comprises a front, back and a spout receiving portion.

12. The system of claim 1 further comprising a dispensing container.

13. A method of dispensing product, comprising:
Securing a product filled bag in a roller assembly;
Translating a roller assembly relative to the product filled bag;
Forcing product within the bag toward a valve assembly;

Dispensing product through the valve assembly.

14. The method of claim 6

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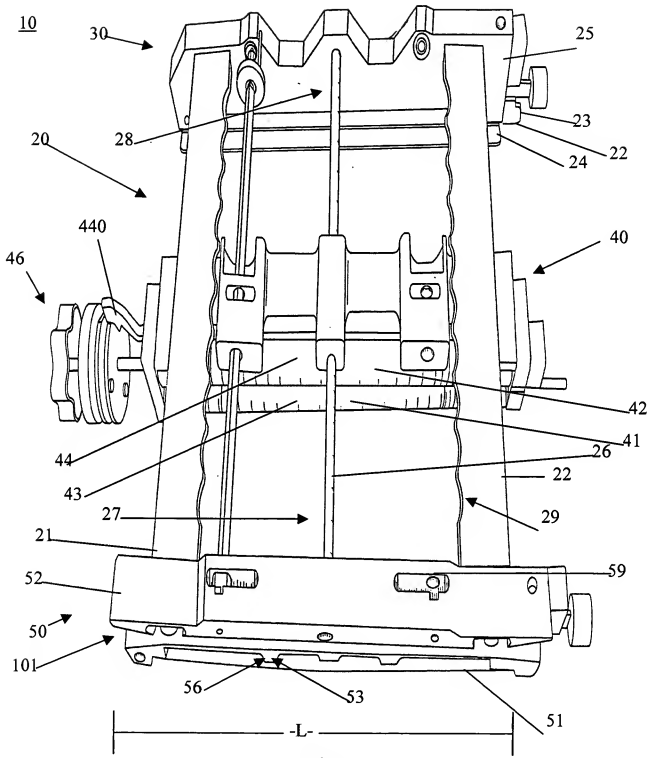
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FIG. 1

FIG. 1A

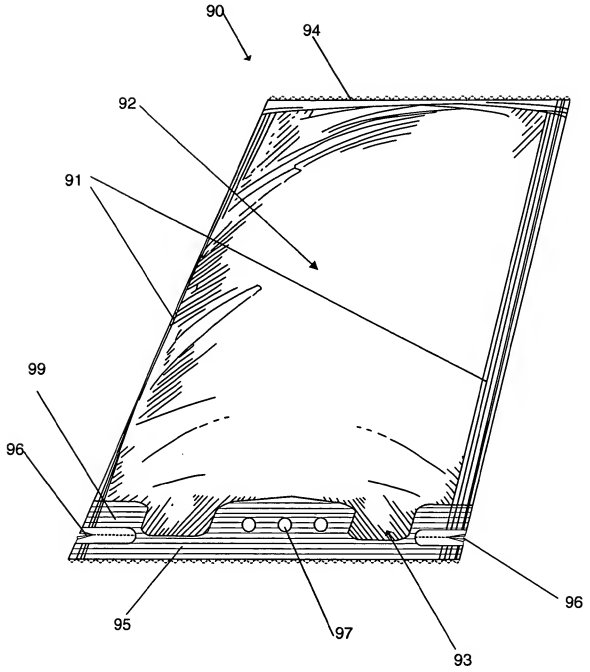
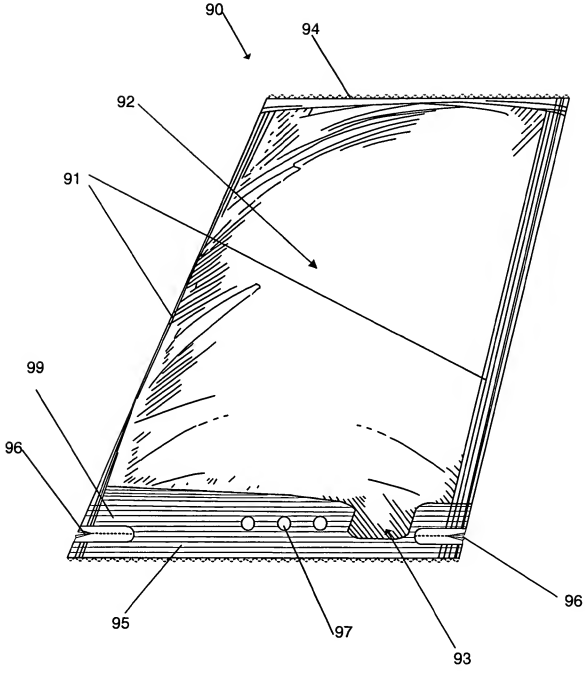


FIG. 1B



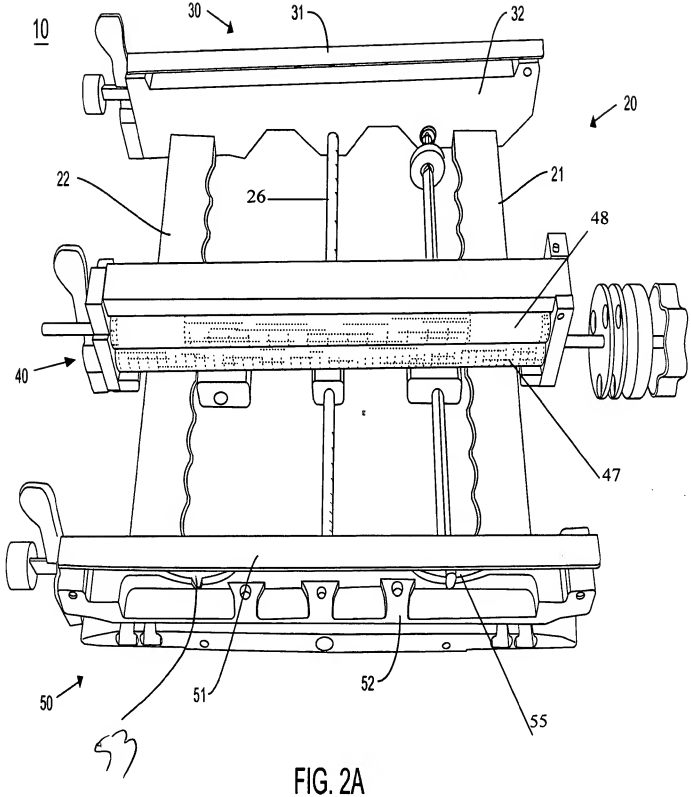


FIG. 2A


FIG 23

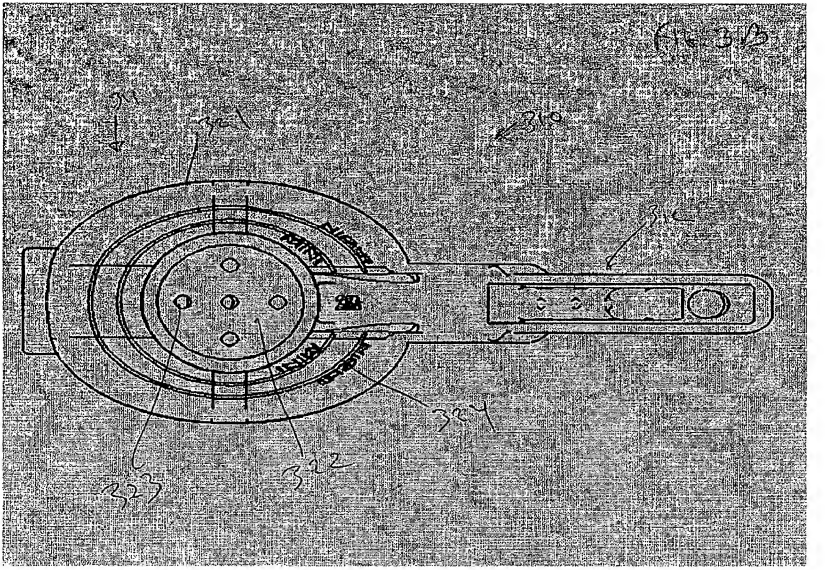


Fig. 3B
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FIG. 4

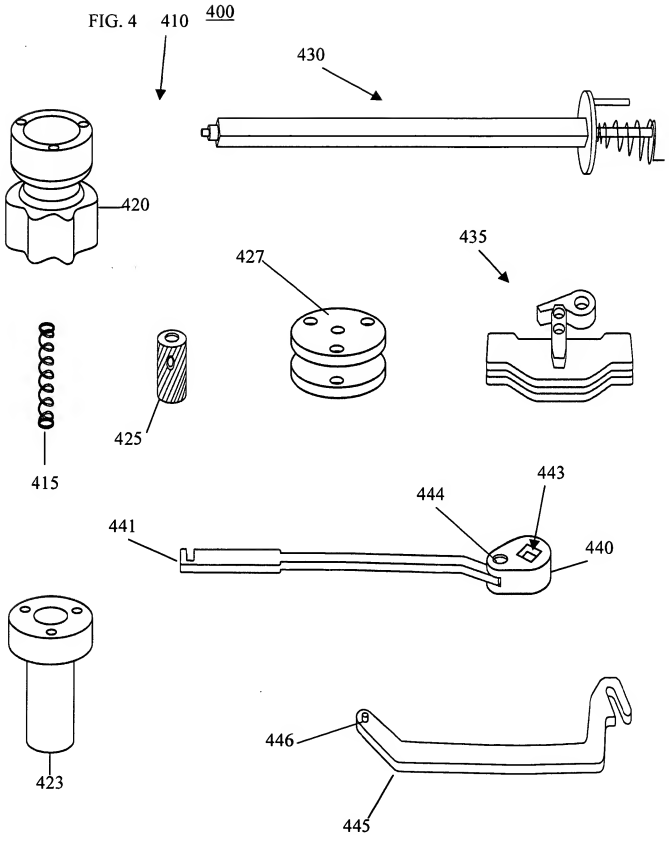
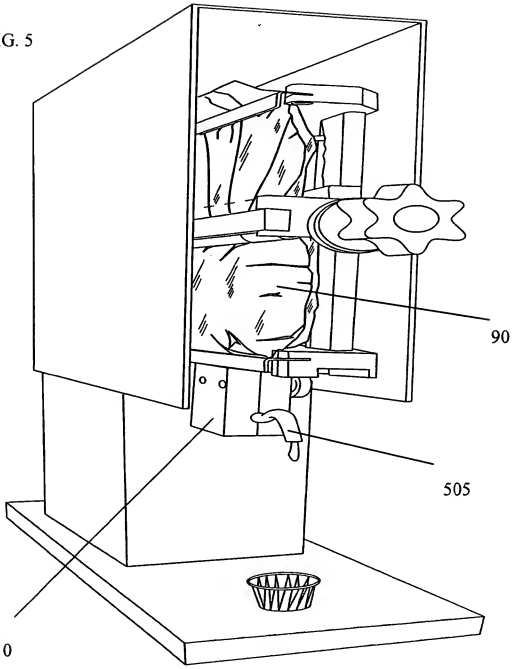


FIG. 5



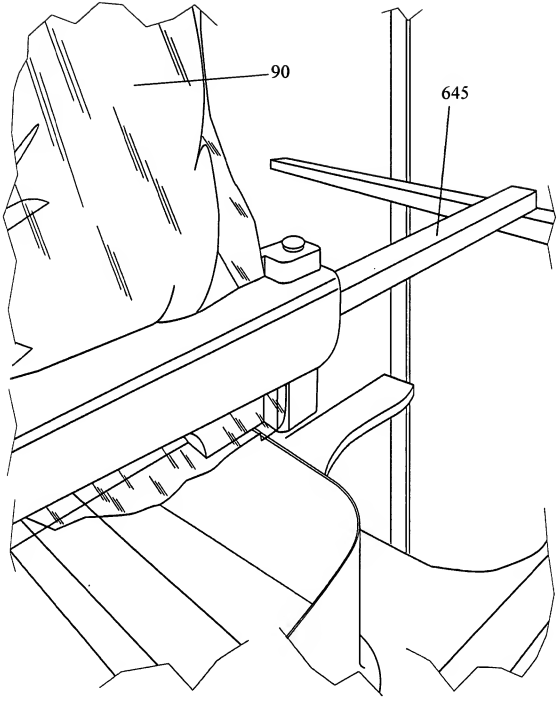


FIG. 6

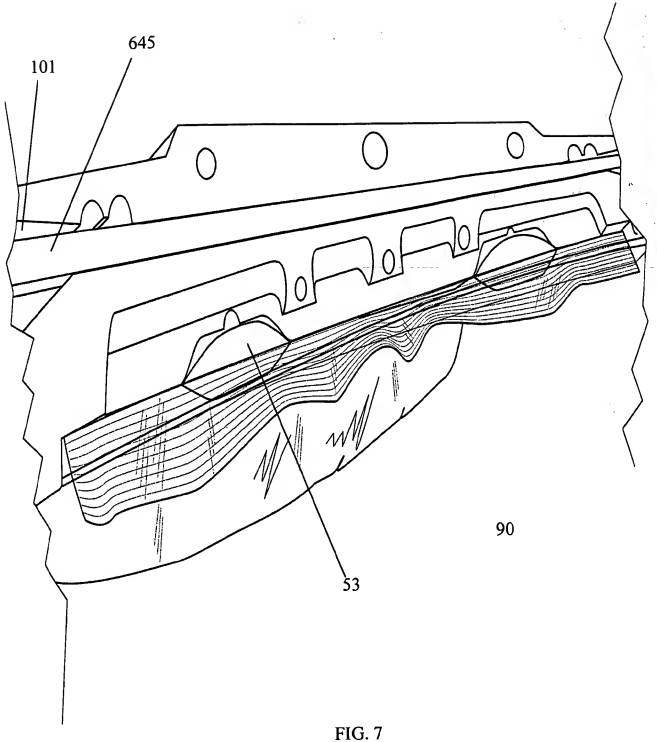


FIG. 7

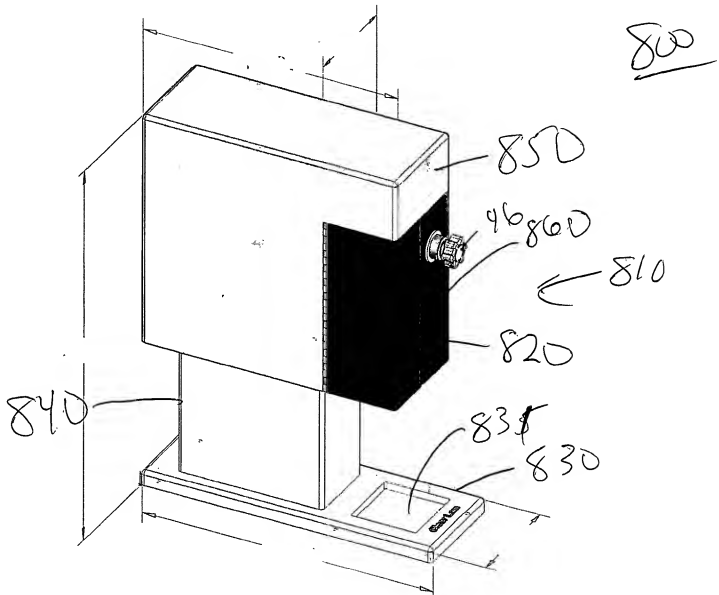


Fig 8.